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EXAMINER	
MERKLING, MATTHEW J	
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Please find below and/or attached an Office communication concerning this application or proceeding.

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/552,551
Filing Date: February 06, 2007
Appellant(s): BERGGREN ET AL.

Craig M. Lundell
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 2/1/2011 appealing from the Office action mailed 8/2/2010.

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The following is a list of claims that are rejected and pending in the application:

1, 2 and 4-6

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being maintained by the examiner except for the grounds of rejection (if any) listed under the subheading "WITHDRAWN

REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

(8) Evidence Relied Upon

US 4,650,651 FUDERER 3-1987

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1, 2 and 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fuderer (US 4,650,651).

Regarding claims 1 and 6, Fuderer discloses a process for the preparation of a gas containing hydrogen and carbon monoxide (see abstract) from a carbonaceous feedstock, the process comprising:

(a) partially oxidizing a carbonaceous feedstock (see col. 6 lines 21-28 which discloses that oxygen and a hydrocarbon feed are partially combusted in reaction zone 9) in a vertically oriented tubular partial oxidation reactor vessel (see Figure) having an upper end (top of reaction zone), and a lower end having an inlet (lower end is the exit of the conduit 8), the vessel comprising a burner at the upper end (as discussed above, to partially combust the feed hydrocarbon) thereby obtaining a first gaseous product of hydrogen and carbon monoxide (due to partial combustion, see reaction 3 in column 5 which takes place in reaction zone 9);

(b) catalytically steam reforming a carbonaceous feedstock (such as methane fed through conduit 11, see Figure) in the presence of steam (fed through conduit 2, see Figure) in a convective steam reformer zone in a second vessel (the second vessel comprises the heat exchange tubes 4) thereby obtaining a steam reformer product (col. 5 lines 52-60);

(c) reducing the temperature of the first gaseous product by mixing the first gaseous product with the steam reformer product by feeding the steam reformer product into the said inlet yielding a first mixture (see col. 6 lines 30-36 which discloses that reaction mixture at the outlet of conduit 7, which is from the steam reformer, is mixed and the temperature of the reformer product rises which also means that the temperature of the first gaseous product is decreased);

(d) contacting the first mixture with a bed of reforming catalyst (8) positioned in the lower end of the partial oxidation reactor vessel just below the said inlet (see Figure) and obtaining a second mixture (at the exit of pellet bed 20); and

(e) feeding the second mixture to the second vessel (effluent from reforming catalyst 2 enters second vessel through the throat joining the two vessels, see col. 7 line 64 - col. 8 line 3 which discloses that the throat separates these two vessels) providing heat for the convective steam reforming reaction zone in step (b) by convective heat exchange between the second mixture and the steam reformer reactor zone (see Figure where effluent from reforming zone 8 is heat exchanged with steam reforming zone 5) thereby obtaining a hydrogen and carbon monoxide containing gas having a reduced temperature.

Fuderer, however, does not explicitly disclose that the temperature of the first gaseous product is between 1100°C and 1500C, does not explicitly disclose that the temperature of the second mixture is between 950°C and 1100°C, and does not explicitly disclose that the temperature of the first gaseous product is reduced by between 300°C and 750°C.

However, the precise temperature of the first gaseous product, second gaseous product and the amount of cooling of said first gaseous product by introduction of the steam reformer product is not considered to confer patentability to the claims. As the amount of heat transferred to the endothermic reforming reaction taking place in the first reforming zone and the second reforming zone is variable that can be modified by adjusting the temperature at which the first gaseous product and second mixture are maintained as well as the temperature drop of the first gaseous product by introduction of the steam reformer product (see Fuderer, col. 9 line 47 – col. 10 line 2, which discloses that the temperature at which the partial combustion takes place has a direct effect on the amount of heat that is transferred to the endothermic steam reforming reactions), the precise temperature and temperature drops of these streams would have been considered a result effective variable by one having ordinary skill in the art at the time the invention was made. As such, without showing unexpected results, the claimed temperature of the first gaseous product and second mixture, as well as the temperature drop of the first gaseous product by introduction of the steam reformer product cannot be considered critical. Accordingly, one of ordinary, skill in the art at the time the invention was made would have optimized, by routine experimentation, the claimed temperature of the first gaseous product and second mixture, as well as the temperature drop of the first gaseous

product by introduction of the steam reformer product in the process of Fuderer to obtain the desired heat transfer to the endothermic reforming reactions (In re Boesch, 617 F.2d. 272, 205 USPQ 215 (CCPA 1980)). Since it has been held that where the general conditions of the claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. (In re Aller, 105 USPQ 223).

Regarding claim 2, Fuderer does not explicitly disclose the steam to carbon molar ratio of the feed to step (b) is between 0.5 and 0.9.

However, the precise steam to carbon ratio in the feed is not considered to confer patentability to the claims. As the amount of carbon deposition and acceptable amount of methane contained in the effluent are variables that can be modified by adjusting the steam to carbon ratio of the feed (see Fuderer col. 8 lines 47-53), the precise ratio would have been considered a result effective variable by one having ordinary skill in the art at the time the invention was made. As such, without showing unexpected results, the claimed ratio cannot be considered critical. Accordingly, one of ordinary, skill in the art at the time the invention was made would have optimized, by routine experimentation, the ratio in the feed of Fuderer to obtain the desired amount of carbon deposition and acceptable amount of methane contained in the effluent (In re Boesch, 617 F.2d. 272, 205 USPQ 215 (CCPA 1980)). Since it has been held that where the general conditions of the claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. (In re Aller, 105 USPQ 223).

Regarding claim 4, Fuderer further discloses the content of methane in the steam reformer product is between 1 mol% and 10 mol% relative to the carbon present as

hydrocarbon in the carbonaceous feed to step (b) (see col. 12 lines 25-32 which discloses uncoverted methane will comprise 2-3%).

Regarding claim 5, Fuderer does not explicitly disclose the methane conversion in step (d) is between 10 wt% and 50 wt%.

However, the methane conversion in step (d) is not considered to confer patentability to the claims. As the acceptable amount of methane released from the reforming system of Fuderer is variable that can be modified by adjusting the amount of methane converted in step (d) (see col. 8 lines 47-67), the precise conversion would have been considered a result effective variable by one having ordinary skill in the art at the time the invention was made. As such, without showing unexpected results, the claimed conversion cannot be considered critical. Accordingly, one of ordinary, skill in the art at the time the invention was made would have optimized, by routine experimentation, the conversion in the process of Fuderer to obtain the desired acceptable remaining methane in the product gas (In re Boesch, 617 F.2d. 272, 205 USPQ 215 (CCPA 1980)). Since it has been held that where the general conditions of the claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. (In re Aller, 105 USPQ 223).

(10) Response to Argument

On page 3, Appellant argues that Fuderer does not teach a catalytically steam reformed carbonaceous feedstock to cool the partially oxidized carbonaceous feedstock in the lower end of the first vessel before passing through the bed of reforming catalyst positioned in the lower end of the partial oxidation reactor vessel. The examiner notes, however, that this

limitation is not included in the claim. Furthermore, the examiner points out that Fuderer does indeed teach such a limitation. In the figure of Fuderer, the partially oxidized feedstock (in zone 9) is cooled by catalytically steam reformed feedstock (exiting tube 7), which is then cooled as it passes down to the lower end of the partial oxidation reactor vessel (top vessel in the figure).

In response to Appellant's argument that the references fail to show certain features of Appellant's invention, it is noted that the features upon which Appellant relies (i.e., cooling the partially oxidized carbonaceous feedstock in the lower end of the first vessel) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See In re Van Geuns, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

As best understood, it appears as though Appellant is arguing that the apparatus taught by Fuderer is not identical (the first and second vessels are contained in the same larger container) as the two separate vessels that are depicted in Appellant's drawing. The examiner notes, however, that Appellant is claiming a process, and not the apparatus. Furthermore, such a modification to separate the two vessels of Fuderer would have been obvious to one of ordinary skill in the art for a number of purposes such as for space requirement considerations (two separate reactors would not take up as much vertical space as two side by side separate vessels).

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Matthew J Merkling/

Examiner, Art Unit 1723

/Alexa D. Neckel/

Supervisory Patent Examiner, Art Unit 1723

Conferees:

Alexa D. Neckel /A.D.N./

Supervisory Patent Examiner, Art Unit 1723

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Supervisory Patent Examiner, Art Unit 1726